Title: RADARSAT NAVIGATION
Appropriate Topic: Experience from current- or recent missions
AI ternate l'epic: N/A

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Abstract,:

This paper describes the inter-agency collaboration and interfaces
between Jet Propulsion Laboratory (JPL) and the Canadian Space agency
(CSA) for the Flight Dynamics segment of the RADARSAT mission support.
Launch occurred on 4 Nov, '95.

The mission description is provided along with it's purpose,
characteristics and accuracy requirements. The injection orbit
features include biasing of the semi-major axis in order to avoid any
need for retrograde burn.

The JPL-CSA interface consisted of pre-launch compatibility testing in
dynamics modeling, spacecraft trajectory generation and in orbit
estimation. In spite of limitations and differences in modeling,
compatibility was attained in all areas. Participation by Deep Space
Network (DSN) and non-DSN stations along with the use of existing Earth
Orbiter missions such as SAMPEX and ERBS are detailed. The above tests
helped in validating CSA's Flight Dynamics software and Canadian
Tracking sites.

The mission operations plan, schedule for orbit solution generation,
exchange of Inter-Center Vectors (ICVs) , maneuver design and supply
of maneuver information to JPL are detailed. The maneuver apriori
information was incorporated in the antenna predict inputs provided to
the DSN. The lead agency (CSA) was responsible for the mission, and
maneuver design and execution. JPL was responsible for tracking and
navigation during the Launch and Early Orbit Phase (LEOP) and into the
Commissioning phase. CSA performed navigation functions in parallel.
Orbit solutions using data exclusively from the Canadian sites
demonstrated CSA's ability to provide all the required navigation
products during routine mission operations. After 18 Dec, '95 CSA
assumed sole responsibility for Radarsat navigation and DSN support was
scaled down after 2 Feb, '96. Radarsat demonstrated a clear example of
the synergism resulting from close cooperation between two agencies.